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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

TOBIAS GERLACH

Serial No.: 10/678,799

Filed: October 3, 2003

Group Art Unit: 2857

Examiner: West, Jeffrey R.

For: METHOD FOR DETERMINING THE FREQUENCY OF
THE CURRENT RIPPLE IN THE ARMATURE CURRENT
OF A COMMUTATED DC MOTOR

Attorney Docket No.: KOA 0242 PUS (R 1415)

REPLY BRIEF UNDER 37 C.F.R. § 41.41

Mail Stop Appeal Brief - Patents
Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is in response to the Examiner's Answer mailed May 26, 2005 for the above-identified patent application.

The Examiner's Answer did not contain a new ground of rejection. The Applicant requests that the appeal be maintained and wishes to file this Reply Brief in order to address the Examiner's Answer.

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

I hereby certify that this paper, including all enclosures referred to herein, is being deposited with the United States Postal Service as first-class mail, postage pre-paid, in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, U.S. Patent & Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 on:

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Applicant's Reply to (3) Status of Claims

The Examiner correctly noted that claims 4, 5, 8, 14-15, and 20 have been cancelled. The Applicant inadvertently omitted to indicate that claim 5 was cancelled.

Applicant's Reply to (10) Response to Argument of Examiner's Answer

As noted in the Examiner's Answer and in the Appeal Brief, the Examiner posited that Falk discloses a circuit for the compensation of current interference signals including means for:

- (i) determining a useful part of a current signal (citing col. 3, lines 58-66) by sensing a current signal containing a useful part and interference (citing col. 3, lines 1-9);
- (ii) obtaining a voltage signal that contains the interference (citing col. 3, lines 14-21); and
- (iii) subtracting the voltage signal from the current signal to result in the current signal void of interference (citing col. 3, lines 30-34).

The Applicant understands the teachings of Falk as follows. A current signal u_i is fed to an input of a summing amplifier 3 (col. 3, lines 22-27). A voltage signal u_B is fed out from an amplifier 22 to the same input of the summing amplifier 3 (col. 3, lines 17-27). The current signal has a useful component and an interference component (col. 3, line 67 through col. 4, line 10). The voltage signal has an interference component (col. 3, lines 35-39). The interference component of the voltage signal is "approximately proportional" to the interference component of the current signal (col. 3, lines 35-43).

The amplifier 22 has an inverting action which causes the interference component of the voltage signal amplified by "K" to be subtracted from the current signal

thereby causing the summing amplifier 2 to output a resultant superimposed signal (col. 3, lines 45-50). The resultant superimposed signal includes a residual interference component (col. 3, lines 43-57). A residual interference component present within the resultant superimposed signal output from the summing amplifier 3 implies that the interference components of the current signal and the voltage signal are not the same. The interference component of the voltage signal may be larger than the interference component of the current signal in which case "overcompensation" takes place (col. 3, lines 43-40). Similarly, the interference component of the voltage signal may be smaller than the interference component of the current signal in which case "undercompensation" takes place (col. 3, lines 43-50). The polarity of the residual interference component contained in the resultant superimposed signal is used by a polarity comparator 4 to control the "K" gain of the amplifier 22 such that the "result is a closed control loop which at all times maintains a state of balance within narrow limits between overcompensation and undercompensation" (col. 4, lines 26-38).

Thus, Falk discloses obtaining an interference component "within narrow limits" equal to the interference component contained in a current signal by amplifying the interference component contained in a voltage signal by an amplification factor determined from feedback (i.e., the residual interference component) indicative of the difference between the interference components of the voltage and current signals. As such, Falk does not teach obtaining a current signal having an interference component and obtaining a voltage signal having the interference component.

In contrast, the claimed invention is directed to determining a frequency spectral result of an armature current signal containing "current ripples and interference" and determining a frequency spectral result of a motor voltage signal containing "the" interference. Further, in the claimed invention, the voltage signal containing the interference contained in the current signal is "of the motor" and, as such, is not derived in part based on a comparison with the current signal as taught by the feedback configuration of Falk.

Accordingly, what Matsumoto and Falk fail to suggest without the benefit of the Applicant's disclosure is where to find a voltage signal that contains the same interference contained in the armature current signal and at the same time is essentially void of contributions resulting from the current ripples contained in the armature current signal without requiring the use of feedback configurations, comparisons between the voltage and current signals at previous places in time, etc. Such a voltage signal is the claimed and disclosed motor voltage signal.

As noted above, the Applicant does not admit that Falk teaches removing interference from a current signal using a voltage signal that contains "the interference" as indicated by the Examiner on page 10 of the Examiner's Answer. This is clear from the Applicant's characterization of Falk as detailed herein and by the Applicant's characterization of the Examiner's position regarding Falk as set forth in page 8 of the Appeal Brief.

Therefore, in view of the foregoing reasons set forth above and in the Appeal Brief, the Applicant respectfully requests that the Board holds that the claims are patentable under 35 U.S.C. § 103(a) over the cited prior art references.

Respectfully submitted,

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Date: May 31, 2005

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